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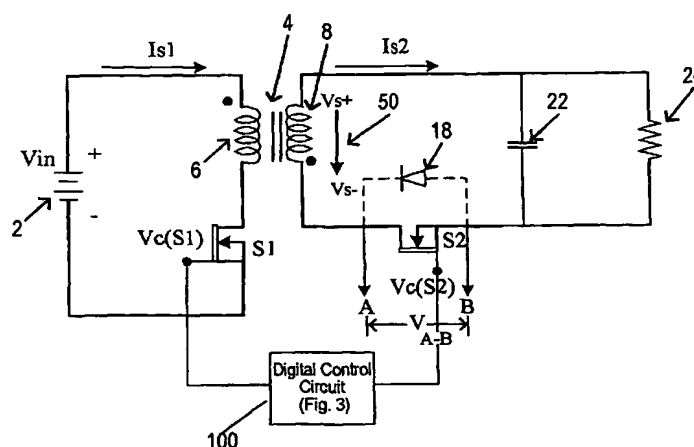
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(54) Title: HIGH EFFICIENCY FLYBACK CONVERTER



(57) **Abstract:** A DC-DC flyback converter that has a controlled synchronous rectifier in its secondary circuit, which is connected to the secondary winding of a main transformer. A main switch (typically a MOSFET) in the primary circuit of the converter is controlled by a first control signal that switches ON and OFF current to the primary winding of the main transformer. To prevent cross-conduction of the main switch and the synchronous rectifier, the synchronous rectifier is turned ON in dependence upon a signal derived from a secondary winding of the main transformer and is turned OFF in dependence upon a signal derived from the first control signal. In one embodiment the first control signal is inverted and delivered to a logic circuit along with the voltage across the main transformer secondary winding and the voltage across the synchronous rectifier. In a further embodiment the first control signal is differentiated and supplied to a control primary winding wound on the outer flux paths of a main transformer core that has a center flux path on which is wound the main transformer primary and secondary windings. A control secondary winding is wound on the outer flux paths in current canceling relation as to flux conducted from the center flux path into the outer flux paths. The control signal for the synchronous rectifier is taken from the output of the control secondary winding in this latter embodiment.